

CLAIMS

1. An atomic force microscope arm for performing atomic force microscopy measurements of an electrically-dependent property of a sample, comprising:

an elongated support member having a proximal region and a distal region;

a rounded piece mounted on the support member along the distal region, the rounded piece defining a contact region; and

a conducting film continuously disposed over the contact region and the support member up to the distal region, for electrically connecting that portion of the conducting film disposed over the contact region to the distal region of the elongated support member.

2. The apparatus according to claim 1 wherein the rounded piece at the contact region has a radius of curvature higher than 10 μm and lower than 100 μm .

3. The apparatus according to claim 2 wherein the rounded piece has a substantially spherical shape along the contact region.

4. A method of making an atomic force microscope arm for performing atomic force microscopy measurements of an electrically-dependent property of a sample, comprising:

establishing an elongated support member having a proximal region and a distal region;

mounting a rounded piece mounted on the support member along the distal region, the rounded piece defining a contact region; and

coating the rounded piece and the support member with a conducting film continuously over the contact region and the

support member up to the distal region, for electrically connecting the conducting film disposed over the contact region to the distal region.

5. The method according to claim 4 wherein the rounded piece at the contact region has a radius of curvature higher than 10 μm and lower than 100 μm .

6. An atomic force microscope apparatus for performing testing comprising:

- a sample holder for holding a first planar thin film;
- an arm comprising a rounded end piece including a second rounded thin film wherein a radius of curvature of the rounded piece exists along a contact surface between the first film and the second film, and wherein the arm and the sample holder are capable of relative movement therebetween to establish a contact between the first thin film and the second thin film; and

- a measurement circuit electrically connected to the first thin film and the second thin film, for making a measurement related (need to reword) a characteristic related to the first film and the second film contacting.

7. The apparatus according to claim 6 wherein the measurement circuit is a contact resistance measurement circuit for making a measurement of a contact resistance between the first thin film and the second thin film when the contact between the first thin film and the second thin film is established.

8. The apparatus according to claim 6 wherein the radius of curvature is higher than 10 μm and lower than 100 μm .

9. The apparatus of claim 7 wherein the contact between the first thin film and the second thin film is established with a first force not exceeding 1 mN.

10. The apparatus according to claim 6 wherein the measurement circuit is a stiction force measurement circuit for making a measurement of a current-dependent stiction force between the first thin film and the second thin film after the contact between the first thin film and the second thin film is established.

11. The apparatus of claim 10 wherein the contact between the first thin film and the second thin film is established at a first force not exceeding 1 N.